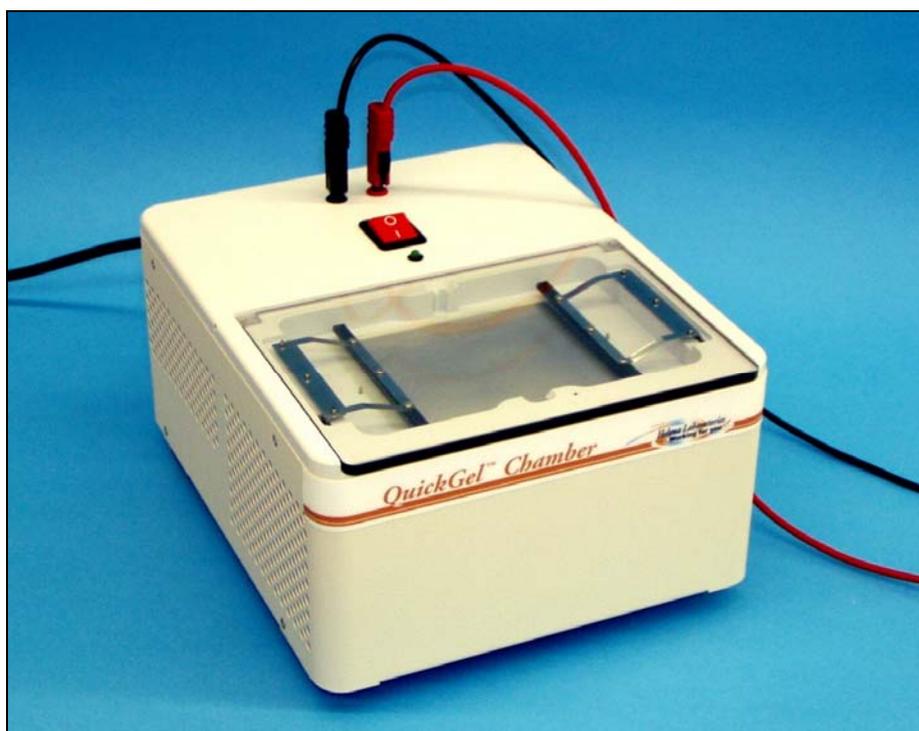




QuickGel[®] Chamber

Gel Electrophoresis and Drying



Operator's Manual

Catalog Number 1284 100-240 V AC, 47-63 Hz

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Section 1 - Instrument Use and Function

The Helena QuickGel[®] Chamber is intended for the electrophoresis of samples on Quick-Gel agarose gels. Once electrophoresis is complete, the QuickGel Chamber provides for the drying of the gel. The QuickGel Chamber can be adapted to fit with all external electrophoresis power sources.

QuickGel Chamber is intended for in-vitro diagnostic use only, and is for use in a laboratory or similar environment.

Refer to the procedure supplied with the gel for information on the following areas:

- Summary
- Principle
- Instruments
- Specimen Collection and Handling
- Sample Application
- Test Procedure
- Performance Characteristics
- Stability of End Product
- Reference Values
- Evaluation of the Bands
- Interpretation of Results
- Bibliography

Section 2 - Principles of Operation

The gel is placed in the electrophoresis chamber, sample is applied, and current is applied from an external electrophoresis power supply at the recommended voltage for the recommended time interval. The sample migrates across the gel, separating into fractions. The gel is then dried and manually stained and destained. The separated fractions can then be identified by comparison to a control applied to the gel along with the samples.

Section 3 - Precautions and Limitations

3.1. The entire operator's manual should be read and understood before attempting instrument operation.

3.2. Refer to the procedure supplied with the gels for proper gel orientation, specimen collection and handling, and other information.

3.3. Use only gels made specifically for use with QuickGel Chamber instruments. Refer to the procedures supplied with the gels for additional precautions and limitations.

3.4. Do not expose the instrument to drafts or to direct sunlight. Do not operate at temperatures above 80°F (27°C) or below 59°F (15°C), or allow prolonged exposure to high humidity.

3.5. Provide adequate room on all sides of the instrument for good air circulation. Do not block the air vent located on the bottom of the instrument.

3.6. To prevent damage to the QuickGel Chamber, never place objects on the top of the instrument.

3.7. This instrument should not be connected to any other devices or instruments in any way not described in this manual.

3.8. Do not expose the sample tray to temperatures above 158°F (70°C), or severe warping of the tray may result, making the tray unsuitable for use.

3.9. We require that the instrument power cord be plugged into an easily accessible, grounded wall outlet of the proper voltage and frequency. These specifications can be found on the serial number plate located on the bottom of the instrument. If your leakage current requirements are more stringent than <5mA, the purchase of an isolation transformer is recommended. Specifications for this transformer are given in section nine.

3.10. For emergency shut down, disconnect both the QuickGel Chamber and the external electrophoresis power supply power cords.

3.11. Should an instrument be contaminated by blood or blood derivative, spray any contaminated surface with a commercial virucidal

and germicidal agent. Observe where the specimens are used inside the instrument and confine cleaning to that area. Wipe up the residue. These materials contain corrosives and are harmful to metal surfaces. No harsh cleansers, acids, or bases should be used or spilled on inner or outer surfaces. Do not immerse the unit. **ALWAYS UNPLUG THE MAIN POWER CORD BEFORE CLEANING.**

3.12. Keep flammable liquids and flammable vapors away from the instrument at all times.

3.13. Instructions for the "responsible body*" (*Under IEC 61010-2-101:2002 -- the person(s) responsible for the use and maintenance of equipment and for ensuring that operators are adequately trained for eliminating and reducing hazards involved in removal from use, transportation, or disposal.)

3.14. Action(s) to be taken in case of malfunction: See section 3.10 and 10.2.

3.15. Requirements for handling biohazards: Due to potential biohazard risk from human based components (blood, CSF [Cerebrospinal Fluid], urine, plasma, blood cells, ect.), guidelines pertaining to Universal Precautions shall be adhered to when handling the samples and operating this instrument. This includes the use of protective gloves and any other protective equipment as warranted for safe handling and disposal of test tubes, reagents, applicators, or other items containing or contaminated by biohazards and use, transportation and disposal of this device. For information on minimizing biohazard risk, see section 3.11.

3.16. Storage and transport environmental requirements:

Operating Temperature range: 15° to 27° C
Storage and shipping temperatures: -20° to 70° C

3.17. The Helena Agent shall provide a power cord or adapter of the proper configuration for the country in which the instrument is to be installed. The power cord or adapter will comply with IEC 60227, IEC 60245, or be certified as rated for the power specified in section 9 of this manual.

Section 4 - Hazards

4.1. If the instrument is used in a manner not specified by this manual, the protection provided by equipment design may be impaired.

4.2. This device contains very high voltages which can be extremely dangerous. Safeguards are built into the instrument to prevent user contact with high voltage; however, ALWAYS TURN OFF THE POWER, DISCONNECT THE MAIN POWER CORD, AND USE EXTREME CARE when attempting disassembly for cleaning, repair, or adjustments.

4.3. Shock hazard. When the electrophoresis lid is open, power to the electrodes is cut off. Electronic shock is theoretically possible, but is prevented by the design (prongs in the lid break the circuit when the lid is opened). However, as an extra safety precaution, do not plug or unplug the leads into the external electrophoresis power supply unless the electrophoresis power supply is turned Off.

4.4. Do not operate with the cover removed.

4.5. Do not touch the gel chamber anywhere except where directed by the labeling. During electrophoresis and drying, the inner surfaces of the gel chamber reach temperatures of 60° to 80°C and can cause burns.

4.6. Due to high heat, do not touch the surfaces of the electrophoresis chamber floor immediately after drying.

4.7. If the instrument needs be relocated after use, first turn off and unplug the instrument; then allow the instrument to cool for a minimum of five minutes before handling the instrument.

4.8. WARNING: External equipment (barcode reader, keyboard, computer, etc.) that is connected to the instrument must have no live parts that are accessible.

Section 5 - Controls

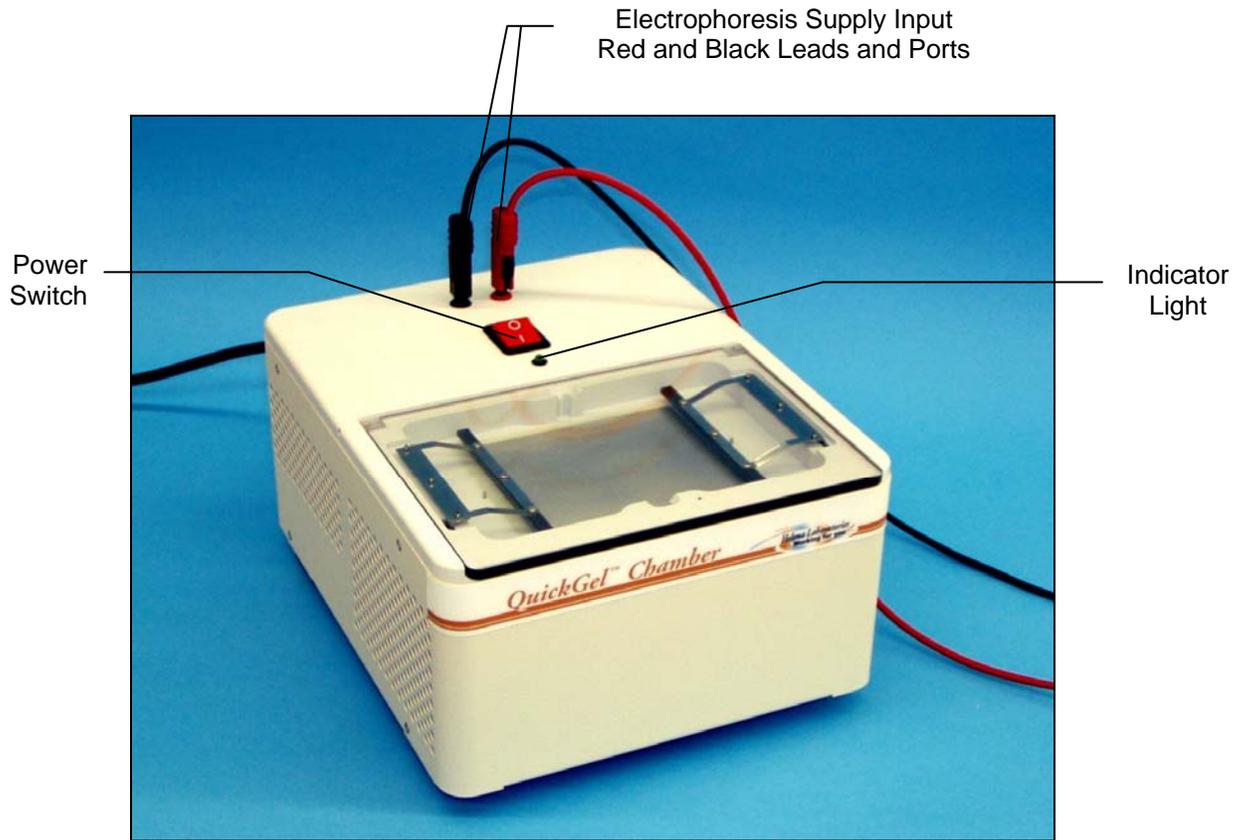


Figure 5-1. QuickGel Chamber Controls

Section 6 - Installation Instructions

WARNING: Read Section Three (Precautions and Limitations) and Section Four (Hazards) before attempting installation or operation.

6.1. Unpacking and Inspection

1. Check the shipping container for signs of damage. If damage is found, immediately notify the shipping carrier.
2. Carefully unpack the instrument and accessories and remove them from the shipping carton. The packing material should be removed undamaged, if possible, should repacking be necessary.
3. Remove plastic wrappings from the instrument and accessories. If scissors or a knife are used to cut the plastic or binding tape, take care not to scratch the instrument.
4. Inspect the instrument for any obvious signs of damage. If damage is found, notify the shipping carrier and Helena Laboratories.
5. Inventory all items and if any parts are missing, recheck the packing materials before notifying Helena Laboratories.

Table 6-1. Inventory

1 QuickGel Chamber
1 Electrophoresis Lid with Carbon Electrodes, Cat. No. 1282
1 QuickGel Dryer Lid, Cat. No. 1281
1 Red Measuring Lead
1 Black Measuring Lead
1 Power Cord
1 Gel Block Remover, Cat. No. 1262
1 Installation Report
1 Operator's Manual

Table 6-2. Available Supplies

Cat. No.	Description
1258	QuickGel Dispo IFE Sample Cups (50/pkg)
1259	QuickGel Dispo Sample Cups (50/pkg)
1265	QuickGel Applicator
1266	QuickGel Applicator Base

1267	QuickGel Applicator Weights (2/pkg)
1268	QuickGel Dispo Cup Tray
1269	QuickGel Dispo Sample Cups (50/pkg)
1270	QuickGel Applicator Blades
1271	QuickGel Modified Applicator Blades
1272	QuickGel IFE Applicator Blades
1274	QuickGel Applicator Kit
1276	QuickGel Staining Rack
1280	QuickGel Replacement Carbon Electrodes
1285	QuickGel Chamber Contact Sheets
3552	QuickGel Rigid Antisera Template

6.2. Installation

1. Select an environment free of excessive humidity, dust and large temperature fluctuations. Ambient temperature should be between 59° to 80°F (15° to 27°C).
2. Place the instrument on a level, flat surface near an external electrophoresis power supply.
3. Confirm that the main power switch is off and plug the QuickGel power cord into the outlet provided on the back of the instrument. Plug the power cord into a grounded wall outlet of the proper voltage and frequency. Because the power cord is the mains disconnect device, the wall outlet used should be easily accessible. These specifications can be found on the serial number plate located on the bottom of the instrument. The wall outlet should not be on the same circuit as any large load device such as a refrigerator, compressor, centrifuge, etc. The instrument's circuitry contains filters to reduce the effect of line voltage fluctuations; however, they should still be avoided. If the operator experiences difficulty and/or if your leakage current requirements are more stringent than <5mA, it may be necessary to purchase and install an isolation transformer. Specifications for this transformer are given in section nine.

4. Plug the red and black leads into the like colored ports on the top of the instrument by simultaneously squeezing the black tab at the end of each lead and inserting the lead into the appropriate port. Do not plug them into the external electrophoresis power supply until instructed to do so.
5. Read the entire Operator's Manual.
6. Complete the QuickGel Chamber Installation Report through the Instrument Data section.
7. Run a gel with controls to verify the instrument's function.
8. Complete the remainder of the QuickGel Chamber Installation Report and return it as instructed.

Section 7 - Operating Instructions

7.1. Instrument Operation

1. Plug the QuickGel Chamber into the external electrophoresis power supply:

a. Plug the red and black leads into the like colored ports on the top of the instrument by simultaneously squeezing the black tab at the end of each lead and inserting the lead into the appropriate port (Figure 7-1).

b. Plug the red and black leads into the external electrophoresis power supply ports, making sure the polarity markings are the same at both ends of the lead.

2. Set time and voltage:

a. Set a timer to the time specified in the procedure supplied with the gel.

b. Set the external electrophoresis power supply to the voltage settings specified in the procedure supplied with the gel. Refer, as needed, to the external electrophoresis power supply Operator's Manual for additional information.

3. Confirm installation of, or install, the electrophoresis lid (section 7.1.1).

4. If the QuickGel Chamber was recently used in the dry mode, the chamber must be cooled:

a. With the electrophoresis lid on, turn on the QuickGel Chamber.

b. Allow the instrument to run in this state for five minutes.

5. Prepare the gel and the sample according to the procedure supplied with the gels.

6. Turn on the QuickGel Chamber power switch and the indicator light illuminates (Figure 7-1).

7. Begin electrophoresis by starting the timer and the external electrophoresis power supply. Refer, as needed, to the external electrophoresis power supply Operator's Manual for additional information.

8. Once electrophoresis is complete, turn off the QuickGel Chamber and the external electrophoresis power supply.

9. To dry a gel using the QuickGel Chamber:

a. Install the dryer lid (section 7.1.1).

b. If this is the final dry cycle of the test, ensure the chamber floor is clean (section 10.1.1).

c. Set a timer to the time specified in the procedure supplied with the gel.

d. Turn on the QuickGel Chamber power switch.

e. Start the timer and close the QuickGel Chamber dryer lid to automatically start the drying process.

f. Once drying is complete, open the dryer lid to automatically stop the drying process.

10. To complete processing, handle the gel as instructed in the procedure supplied with the gels.

11. See section 7.4 for cleanup instructions.

12. If the instrument needs be relocated after use, first turn off and unplug the instrument; then allow the instrument to cool for a minimum of five minutes before handling the instrument.

7.1.1. Chamber Lids

The electrophoresis lid (Figure 7-3) and dryer lid (Figure 7-4) are installed and removed in the same manner (Figure 7-2).

1. To install the lid: Position the lid perpendicular to the chamber. Place the notches in the lid on the horizontal posts located in the chamber and apply slight pressure to secure. The lid should now close and open smoothly.

2. To remove the lid: Open the lid. With the lid perpendicular to the chamber, pull the lid straight up from the chamber.

7.2. To Abort Operation

The test can be aborted by turning off the power supply, unplugging the leads from the QuickGel Chamber, and opening the chamber lid cutting off the power to the chamber.

7.3. Results

Refer to the procedure supplied with the gels for a complete discussion of results and their interpretation.

7.4. Cleanup

The sample cups and applicator blades should be handled and disposed of as bio-hazards. See section 10.1, Maintenance, for information on cleaning the instrument and all reusable pieces. Cleaning is required at different times during the use of the instrument and is specified in section 10.1.

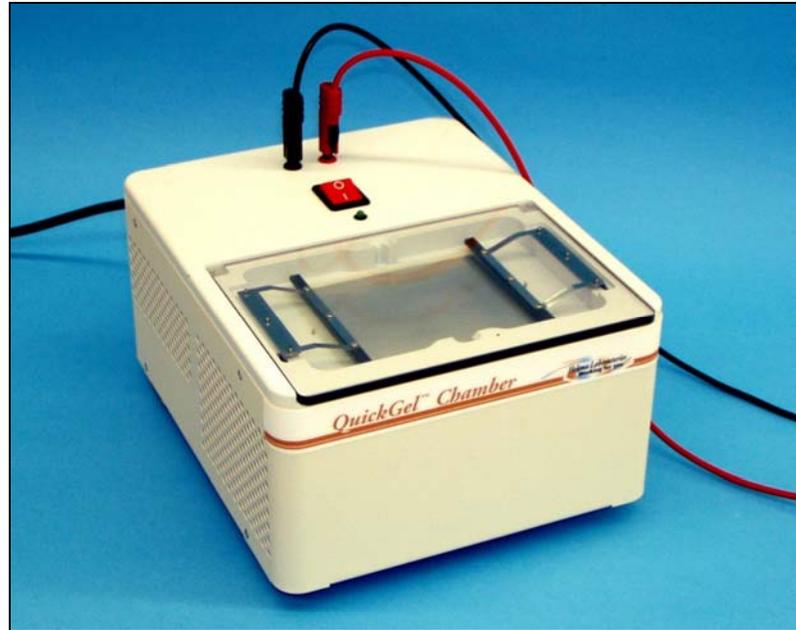


Figure 7-1. QuickGel Chamber

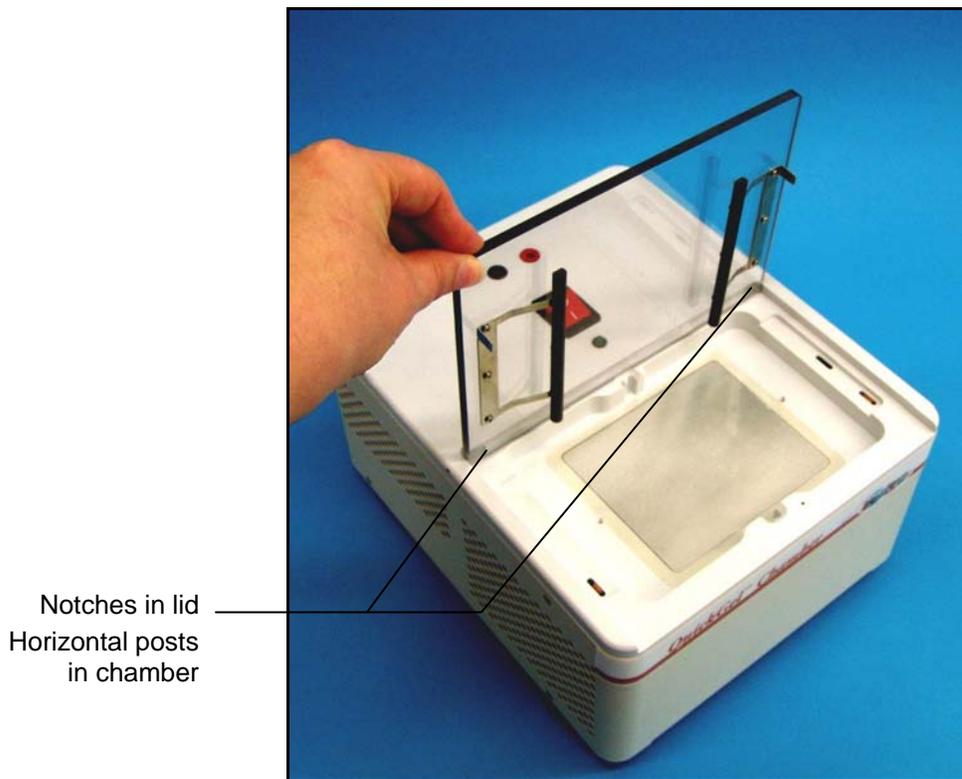


Figure 7-2. Installing/Removing Chamber Lids

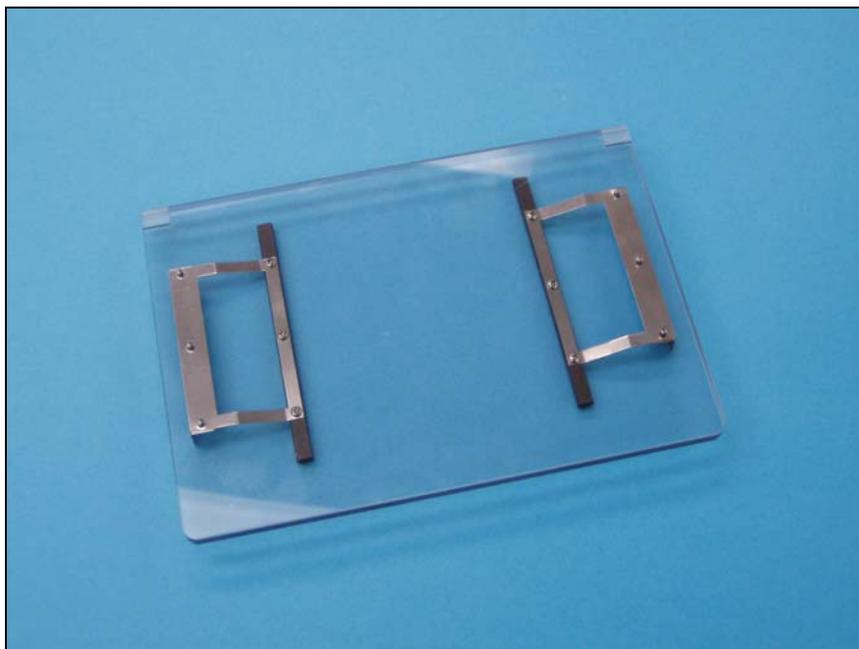


Figure 7-3. Electrophoresis Lid

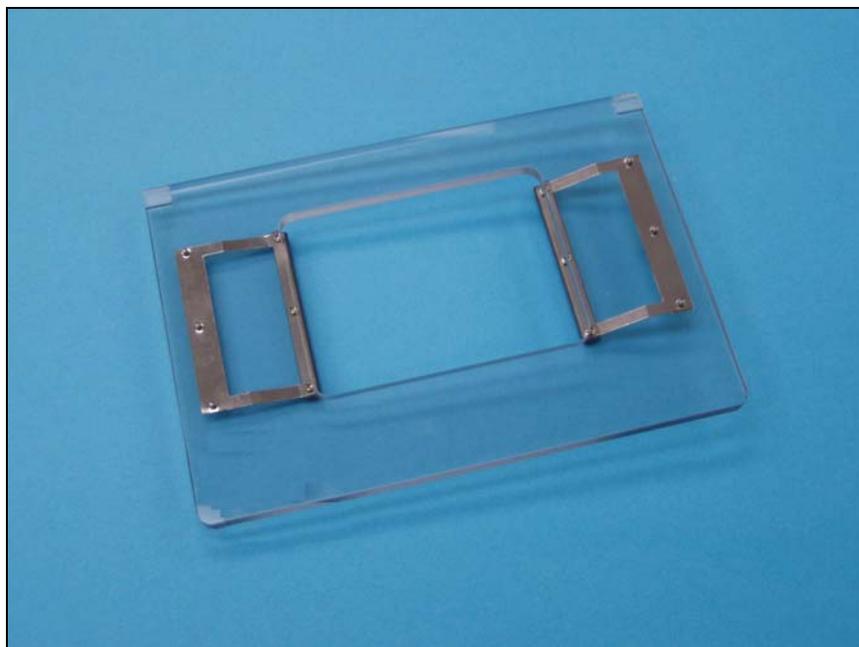


Figure 7-4. Dryer Lid

Section 8 - Test Functions and Quality Control

Refer to the procedures supplied with the gels.

A control should be run on each electrophoresis gel. Control data should be compared to the assay ranges printed on the assay sheet provided with the control. The patient data should be compared to the normal range values for the procedure in use and to the laboratory normal range values. Each laboratory should establish its own normal range of expected values for the procedures in use. Refer to the procedure supplied with the gels for further information.

Section 9 - Performance Specifications

Test Types: Serum Protein Split Beta,
CK, IFE, Acid Hemoglobin, Alkaline
Hemoglobin

Input Power: 100-240 Vac

Frequency Rating: 47-63 Hz

Current Rating: 3 Amps

Fuses, located internally. Do not attempt to
replace fuses.

Dimensions: High x Wide x Deep

5.5 in. (13.97 cm) x 8.5 in. (21.59 cm) x

10.5 in. (26.67 cm)

Weight: \leq 16 pounds

Operating Environment: 15° to 27°C

(59° to 80°F)

Optional Isolation Transformer Specifications:

Input Voltage: 110V

Output Voltage: 110V

Power Range: 360VA

Frequency: 60 Hz

Leakage Current: $<500\mu\text{A}$

Electrophoresis Media Accepted: QuickGel
type

Leads: Sheathed banana plug leads

Cooling: Electrophoresis Temperature con-
trolled at 20°C ($\pm 3^\circ\text{C}$)

Heating: Drying Temperature controlled
at 50°C ($\pm 5^\circ\text{C}$)

Electrodes are contained within the electro-
phoresis lid

Electrophoresis Voltage Range: 0-650VDC
@ 100mA

Section 10 - Maintenance, Troubleshooting, Warranty

10.1. Maintenance

This section describes routine operator maintenance procedures. The procedures included with the gels may also contain required maintenance. For instrument calibration or for maintenance not described in this manual, call Helena Laboratories for assistance.

WARNING: The QuickGel Chamber is factory lubricated. Do NOT lubricate the instrument.

Table 10-1. Maintenance Schedule

<u>After Every Test</u>
Clean Electrophoresis Chamber
Clean the Electrophoresis and Dryer Lids
Clean Reusable Components
<u>As Needed</u>
Replace Contact Sheet

10.1.1. Clean Electrophoresis Chamber

After every test, clean the electrophoresis chamber. Ensure that the chamber floor is not hot, then dampen a lint-free tissue with deionized water and wash the surface of the electrophoresis chamber.

Should an instrument be contaminated by blood or blood derivative, first TURN OFF THE POWER AND UNPLUG THE POWER CORD, then spray any contaminated surface with a commercial virucidal and germicidal agent. Observe where the specimens are used inside the instrument and confine cleaning to that area. Wipe up the residue. These materials contain alcohol and alcohol is a corrosive to metal surfaces. Dry the unit before plugging the power cord in. Clean spills with a soft cloth or sponge. Do not use corrosive or abrasive cleansers.

10.1.2. Clean the Electrophoresis and Dryer Lids

With the lids removed, dampen a lint-free tissue with deionized water and wash the surfaces of the lids (including the electrodes on the electrophoresis lid). Dry with a lint-free tissue.

10.1.3. Clean Applicator, Applicator Base, and Rigid Antisera Template

After each test, clean each reusable piece with soap, water, and a soft brush. Thoroughly rinse with water and dry with lint-free tissues.

If needed, the applicator and/or rigid antisera template devices can be disassembled for cleaning. Unscrew the handle of the device to remove the yoke. Clean and dry the device as described above. To reassemble, determine the front and back of device based on how it fits into the QuickGel Chamber. The device is keyed to only fit one way. Once determined, reassemble the device so that the metal spring on the end of the yoke is to the back of the device and the metal spring on the side of the yoke is to the front of the device. Reattach the yoke by screwing in the handle.

10.1.4. Replacing Contact Sheet (Electrophoresis Chamber Insulation)

The contact sheet, which insulates the electrophoresis chamber floor, may fatigue after extended use. Repeated distortion of an area of the electrophoresis gel, which can be related to a deformity in the underlying contact sheet, is an indication of this and replacement of the contact sheet is recommended.

1. Turn the power switch Off and unplug the power cord and the red and black leads.
2. Remove the old contact sheet by slowly peeling it off, beginning from the right rear of the chamber floor.

3. Remove all remaining adhesive from the surface of the chamber floor using an Adhesive Remover Pad provided with the contact sheets. Once all the adhesive is removed, clean the chamber floor with methanol and a gauze.

4. Any corrosion should be smoothed off the chamber floor. Using the 600 grit emory cloth, provided with the contact sheets, smooth any corrosion. Use caution not to alter the flatness of the chamber floor. Clean any debris from the chamber floor with methanol and a gauze. It is important that the chamber floor be completely flat, smooth, and free of any material.

5. Obtain a new contact sheet from the package. For easier installation, peel back the contact sheet's backing about 1/4" to 1/2" along one of short sides of the contact sheet.

Note: Contact sheets must stay in their container so that they will remain flat. If sheets roll up, leave them rolled up so that they will not come loose from the backing. Rolled sheets are more difficult to apply but may still be used as long as the backing has not separated from the sheet, allowing the adhesive to dry out.

6. When properly applied, the contact sheet lies flat, with the longest sides of the contact sheet oriented left to right and positioned center between the two metal positioning pins. Stick down the left side of the contact sheet, right next to the left pin and inboard of the pins.

7. Continue peeling the backing from the contact sheet while rubbing the contact sheet with a front-to-back stroke using a finger wet with tap water. Avoid wrinkles and bubbles; the sheet may be peeled up slightly, taking care not to stretch it, and smoothed down again to create a flat surface. Rub all the edges of the contact sheet, using a clean gauze, to insure the adhesive sticks to the chamber floor.

8. When the entire sheet is in place, it should lay completely flat and smooth. If the contact

sheet has been stretched, it may be difficult to smooth out the wrinkles. If this occurs, replace the contact sheet.

10.2. Troubleshooting

If the recommended solutions should fail to solve a problem, call Helena Laboratories for assistance.

Table 10-2. Troubleshooting

Problem	Possible Cause	Solution
No power to instrument	Power cord unplugged	Plug cord into proper wall outlet.
Electrophoresis chamber not reaching temperature	Electrical problem	Call Helena Laboratories.
Incubator or dryer too hot	Electrical problem	Call Helena Laboratories.
Fan does not run	Restricted airflow	Remove obstructions and check to be sure enough air space surrounds instrument.
	Electrical problem	Call Helena Laboratories.
Electrophoresis gel has repeated distortion in same area	Fatigued Contact Sheet	Replace contact sheet (see 10.1.4).
Patterns are too long	Chamber not cooled before performing test	With the electrophoresis lid on, turn on the QuickGel Chamber. Allow the instrument to run in this state for five minutes. Rerun test.
Patterns are skewed	Electrodes not properly positioned	Confirm electrodes are making proper contact with the gel and, if needed, reposition the electrodes. Grasp the electrode and pull it outward, gently bending the flat spring away from the clear plastic lid. This should result in the electrodes barely touching the chamber floor when the lid is closed. Rerun test.

10.3. Warranty

Helena Laboratories warrants its products to meet Helena's published specifications and to be free from defects in materials and workmanship. Helena's liability under this contract or otherwise shall be limited to replacement or refund of any amount not to exceed the purchase price attributable to the goods as to which such claim is made. These alternatives shall be the buyer's exclusive remedies.

In no case will Helena Laboratories be liable for consequential damages even if Helena has been advised as to the possibility of such damages.

The foregoing warranties are in lieu of all warranties expressed or implied, including, but not limited to, the implied warranties or merchantability and fitness for a particular purpose.

Warranty Duration

This warranty is provided to the original purchaser for six months from the date of sale.

Particular Exclusions

Unauthorized modification of any part of the QuickGel Chamber instrument will void this Warranty.

Section 11 - Symbology

NOTE: The following symbols may be used in this manual, or on the instrument, to provide information necessary to the user, if applicable.

	Caution, electric shock hazard, high voltages capable of causing personal injury - shut down the instrument and unplug the power cord before touching - do not operate with the cover(s) removed
	Caution, heat hazard - allow heated components to cool before handling
	Caution, general hazard - see Precautions and Hazards (Sections 3 and 4) of Operator's Manual before proceeding
	Direct current
	Alternating current
	Both direct and alternating current
	Ground (earth) terminal
	Protective conductor terminal (grounded conductors)
	Frame or chassis terminal
	Equipotentiality (conductor with all parts at a single potential)
	On (power switch)
	Off (power switch)
	Equipment protected throughout by double insulation or reinforced insulation (equivalent to Class II of IEC 536)
	European authorized representative
	Manufacturer
	Indicates "do not place in trash" in countries or regions requiring recycling and other specific handling, such as in Europe, under the WEEE (Waste Electrical and Electronic Equipment) Directive, 2002/96/EC



QuickGel[®] Chamber

Operator's Manual

For additional information, call
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